Space Weather Forecast

Issued on Sunday, 10 April 2022 at 01:14 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Risk of G1/Minor Storm, mainly on Days 1 and 4 (10 and 13 Apr). Slight chance of G2/Moderate Storm on Day 1.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Low over the past 24 hours, with several mostly minor C-flares from a region just over the southwest limb. There are now two sunspot regions on the Earth-facing disc, as two regions have both rotated off the southwest limb. The remaining two regions are both small and simple. A large filament (area of plasma trapped by the Sun's magnetic field) in the southwest of the disc lifted off around 09/0830 UTC. The associated Coronal Mass Ejection (CME) is still being analysed, with the bulk of the ejecta travelling below Earth's orbit, but it may have an Earth directed component.

Solar Wind / Geomagnetic Activity: The solar wind was indicative of potentially weak CME effects and a possible fast wind arrival late in the period. Wind speeds were mostly slow, rising from 09/2100 UTC to around 440 km/s. The interplanetary magnetic field strength was Weak to Moderate, becoming Strong just before 10/0000 UTC. The north-south component varied moderately, and was mostly southward directed until 09/1630 UTC, when it became largely northward directed. Geomagnetic activity was Quiet to Active (Kp 1-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is expected to be Low or Very Low, with only small and simple sunspots on the disc. There is a Chance for further C-class flares during Day 1 (10 Apr), which will decline as the main region responsible for recent flaring rotates further away from the southwest limb.

Solar Wind / Geomagnetic Activity: Current weak CME effects may be further enhanced by another CME arrival during Day 1 (10 Apr). There is also a coronal hole which is starting to give a fast wind at Earth. Timing of both of these features is uncertain, but combined CME and fast wind effects are expected to dominate during Day 1, slowly starting to ease during Days 2 and 3 (11-12 Apr). A further CME is possible on Day 4 (13 Apr), but timings are currently uncertain as modelling is not yet available.
Geomagnetic activity is forecast to be Quiet to Active with G1/Minor Storms likely and a slight chance of G2/Moderate Storms. Risk of G1 gradually declining through Days 2 and 3, before increasing again on Day 4 with a further possible CME arrival.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	60	20	5	40
Strong	G3	No	2	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	2	1	1	1
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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